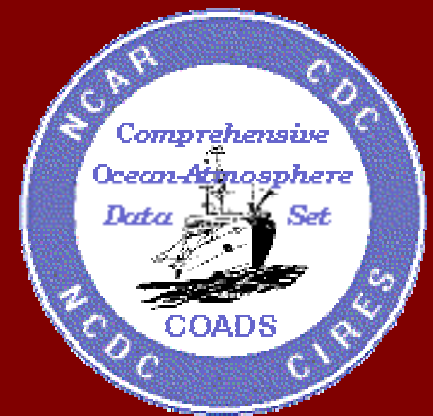


Overview of the International Marine Observational Archive and COADS

Scott Woodruff (NOAA/CDC)

Workshop on Advances
in the Use of Historical
Marine Climate Data

29 January 2002



Outline

- Background on COADS
 - Release structure
 - Products
- Improvements--unresolved issues:
 - Blend with UK MDB + many other sources
 - 1784-1949 \Leftarrow focus
- Plans:
 - Processing improvements
 - (QC \Leftarrow Tom Smith and Xiao-Wei Quan)
 - Auxiliary data additions
 - Proposed: International marine observational archive

Comprehensive Ocean- Atmosphere Data Set (COADS)

- Cooperative project since 1981: NOAA + NCAR
- Voluntary Observing Ships, buoys, etc.
- 1985: Release 1 (1854-1979)
 - Individual observations
 - Year-month summaries: 2° lat \times 2° lon boxes

Open and unrestricted data distribution

COADS development history

- 1993: Release 1a (now 1980-97)
 - $1^{\circ} \times 1^{\circ}$ summaries from 1960
- 1996: Release 1b (1950-79)
- 2001: Release 1c (1784-1949)



Release 2.0 (155M)

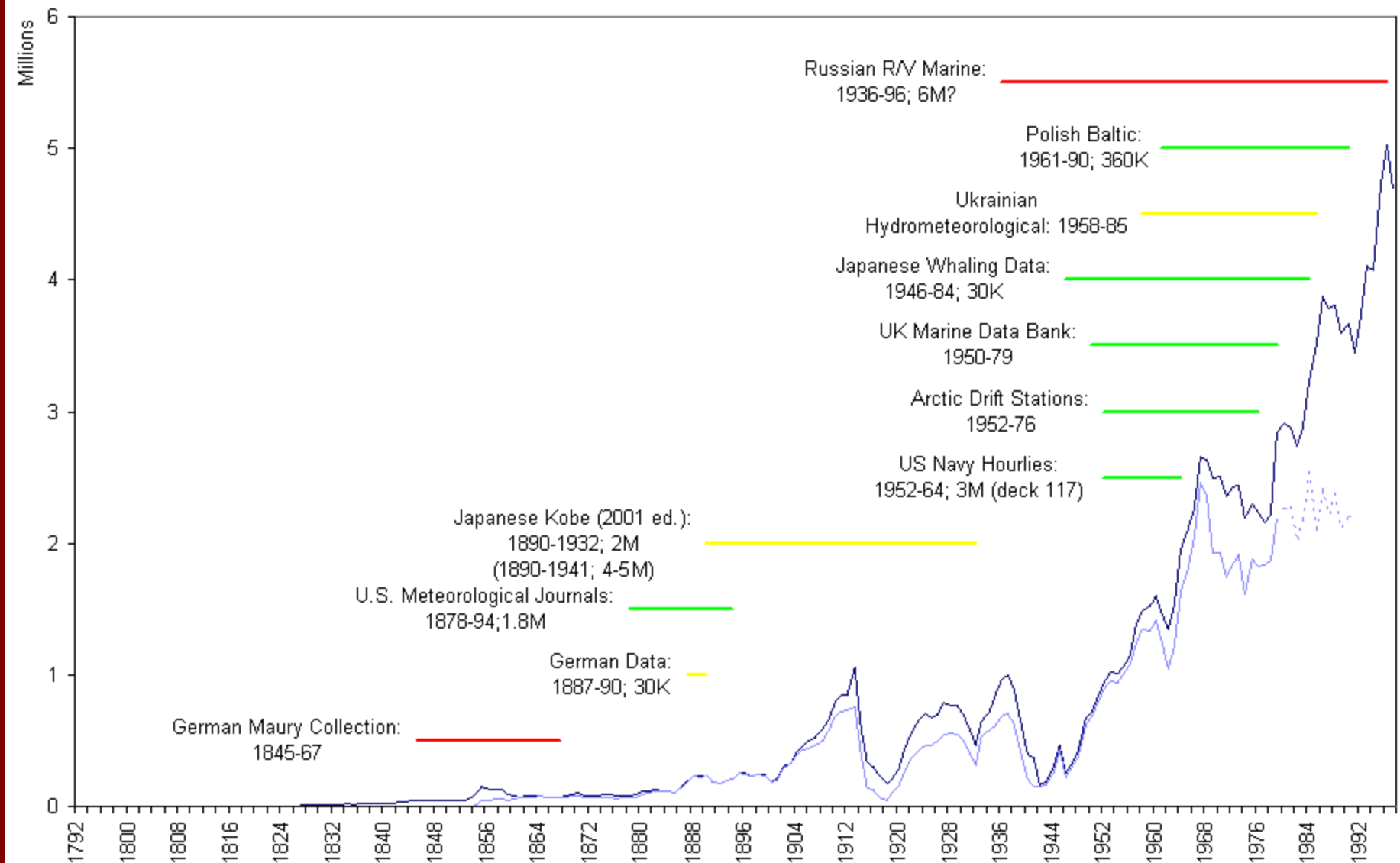
Entire archive: uniform formats (LMRF and MSG)

On-line requests and ascii subsets

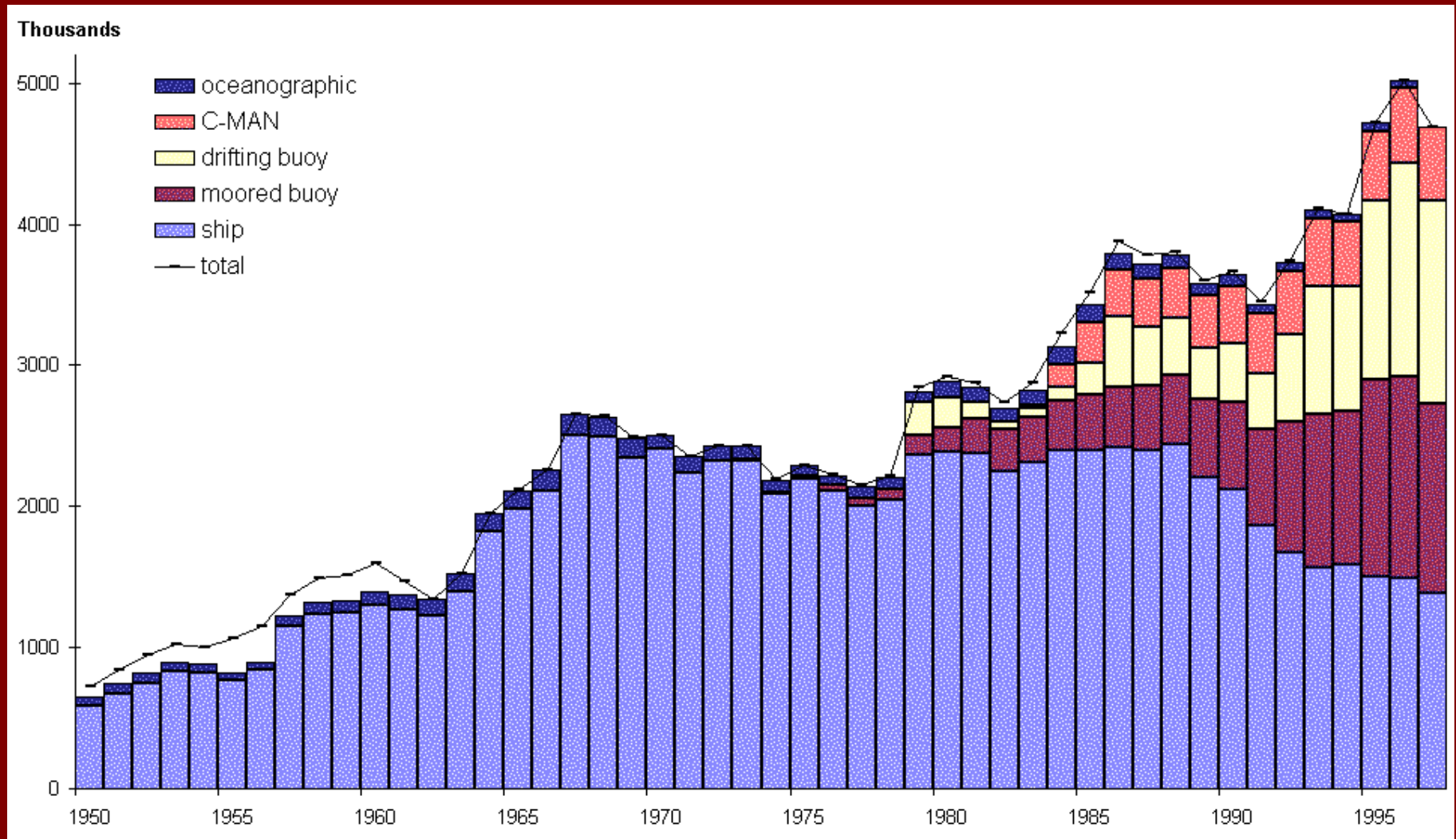
Usage: IPCC and Reanalyses; many other applications

Release 2.0 (dark blue) vs. Release 1 (light blue) reports/year

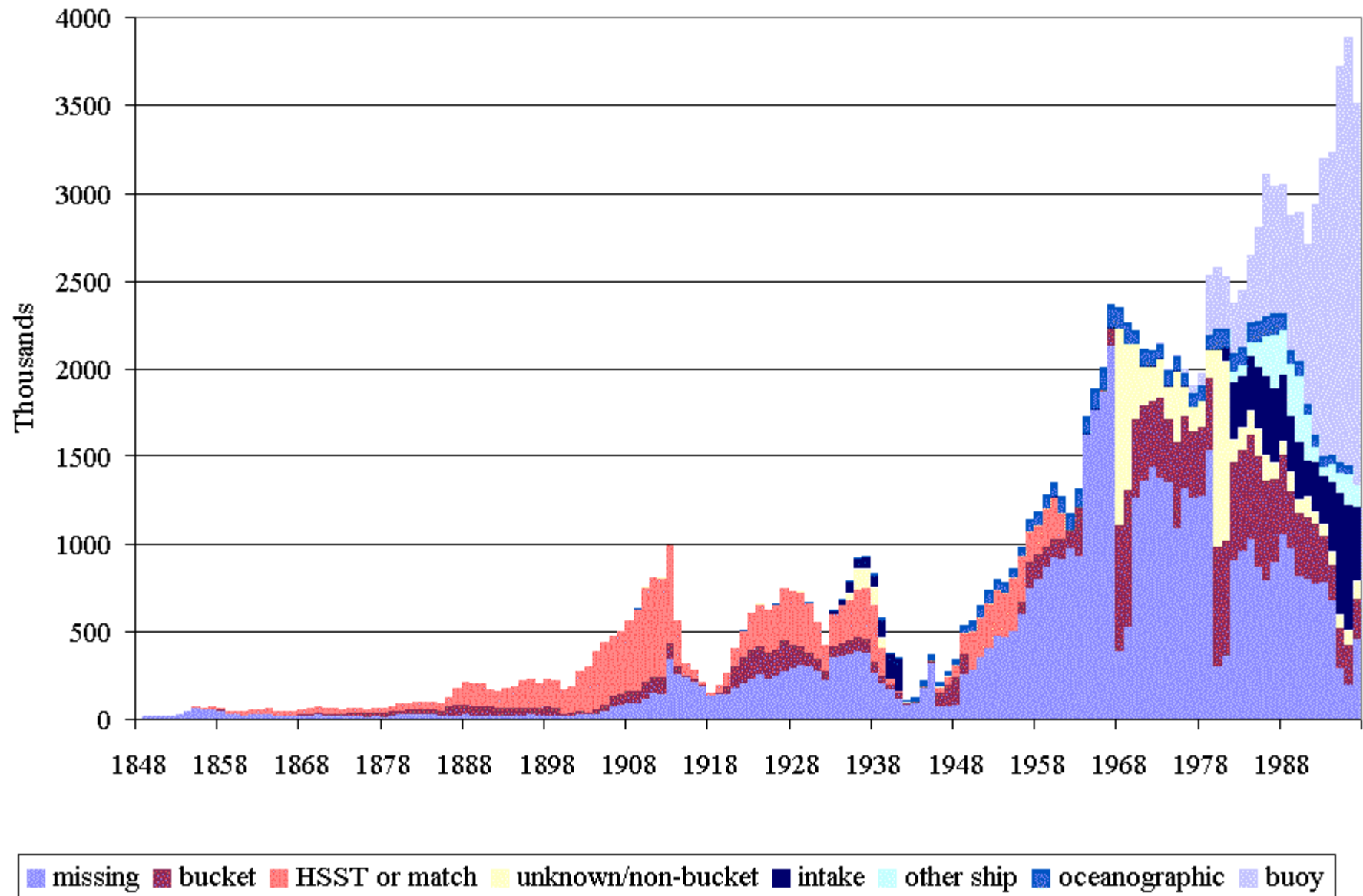
Future blend candidates: red (undigitized), yellow (partly), green (fully)



Mixture of ship/other data: 1950-97

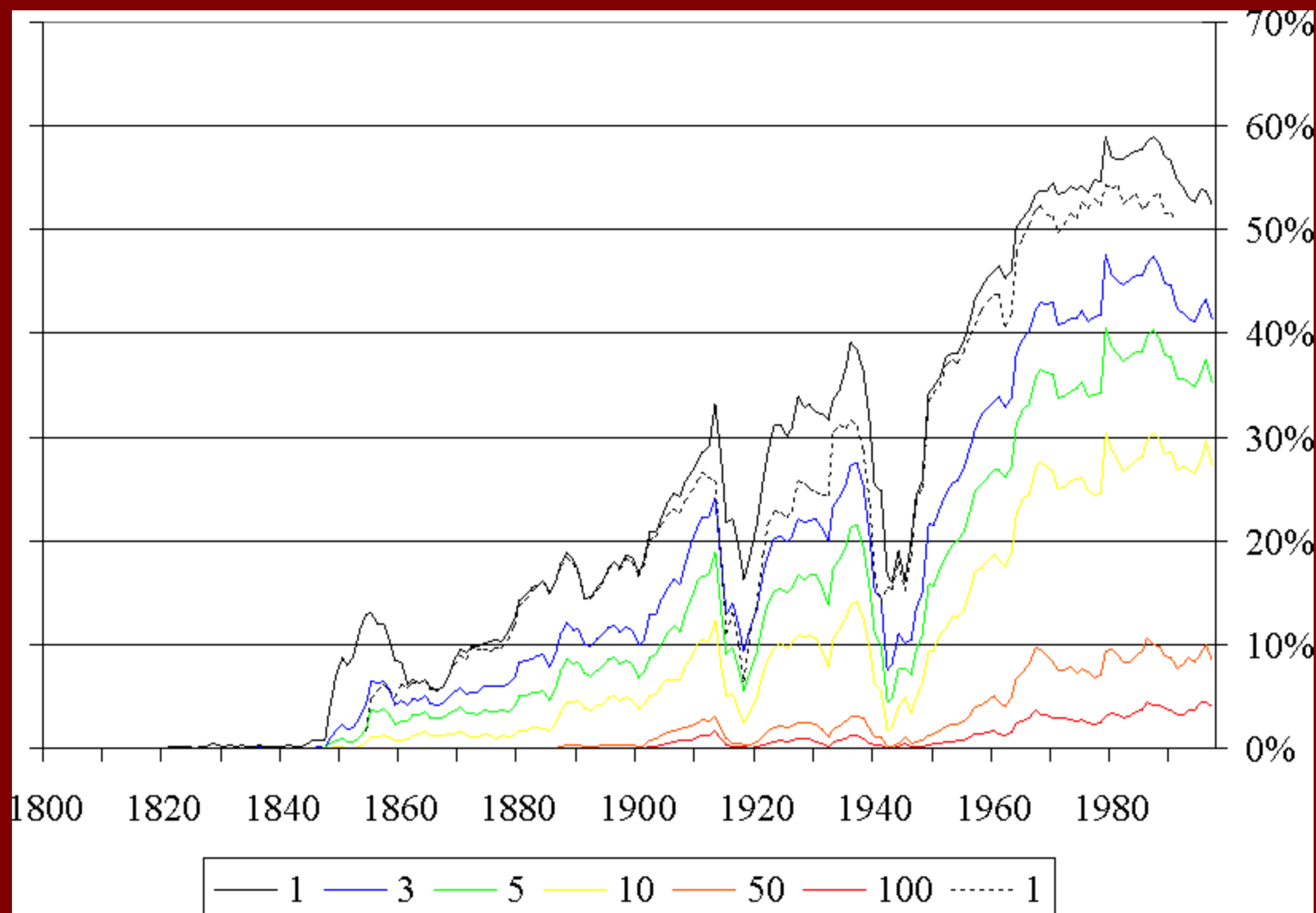


SST Measurement Method Indicators (simplified)



SST % of possible (ocean/coastal) coverage

Obs/2° box: Release 2.0 solid vs. Release 1 dashed



Data and Information Availability:

Project website \Rightarrow single point of access

- Publications
- Documentation and data archive evaluations
- Metadata:
 - WMO Pub.-47 (ship instrumentation; 1973-98)
- Data access options:
 - NCAR: binary/ascii subsets \Leftarrow Steve Worley
 - CDC: netCDF \Leftarrow Roland Schweitzer
 - NCDC: near-real-time obs (under development)



Comprehensive Ocean-atmosphere Data Set (COADS)

Jump to:

COADS Home

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CDC

[Climate Diagnostics
Center](#)

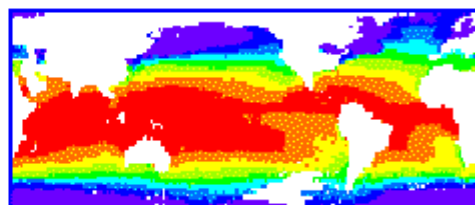
NCAR

[National Center for
Atmospheric Research](#)

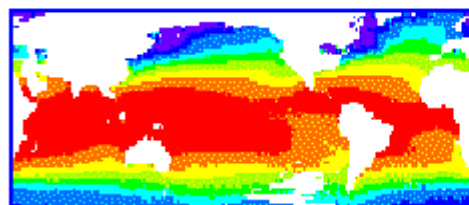
NCDC

[National Climatic Data
Center](#)

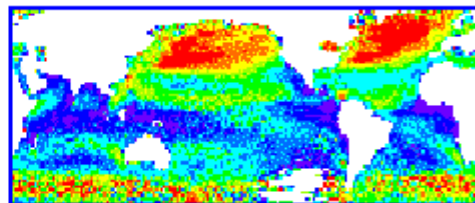
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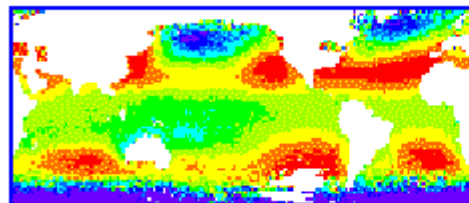
[sea surface temperature](#)



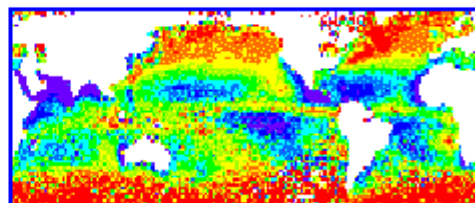
[air temperature](#)



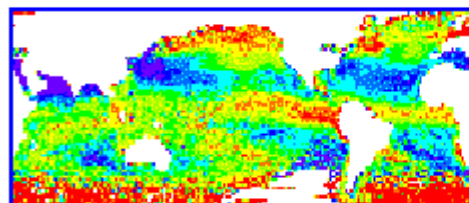
[wind](#)



[sea level pressure](#)



[cloudiness](#)



[relative humidity](#)

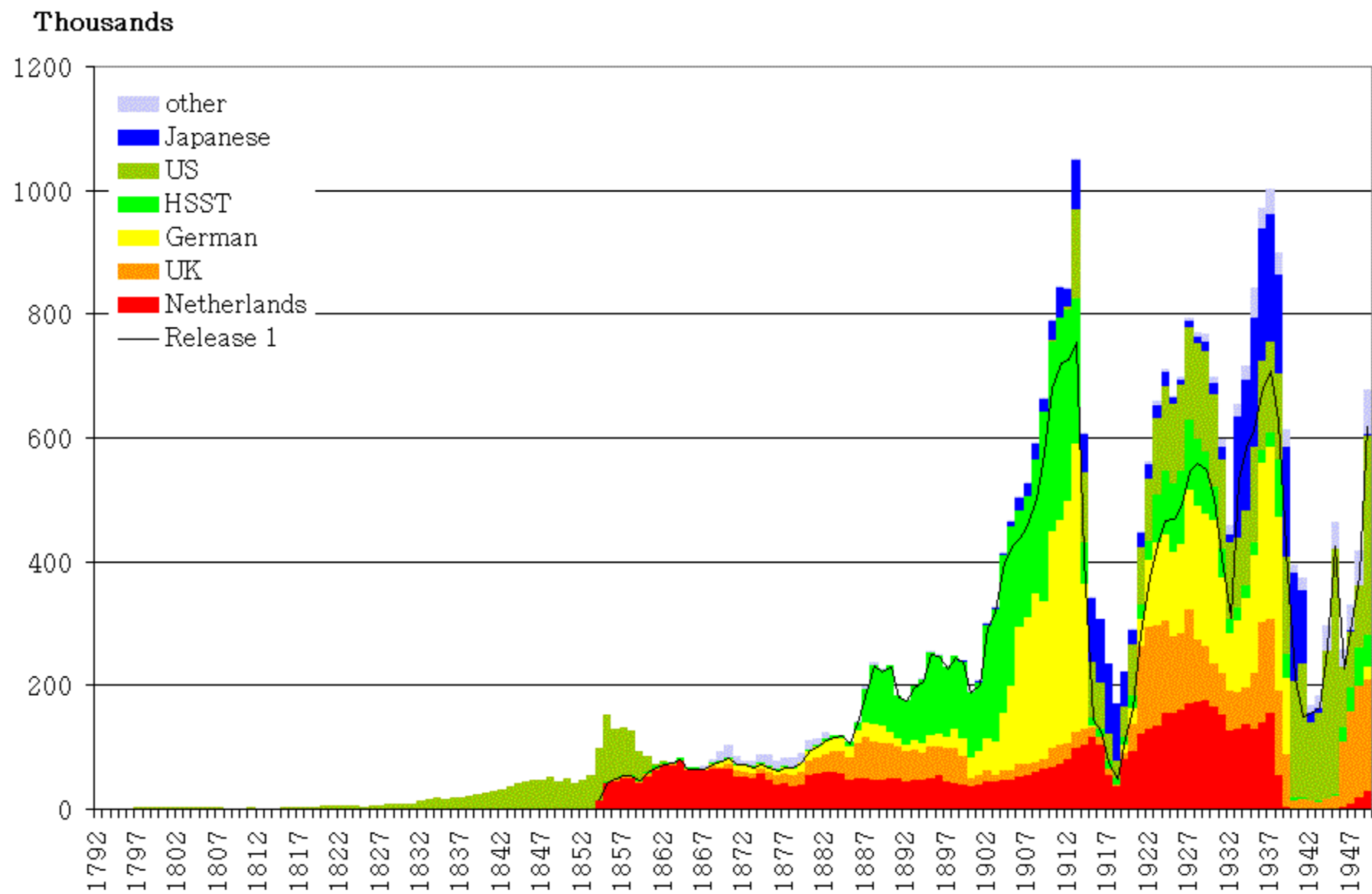
[Chronology and News](#)
[Project Description](#)

[COADS Data and Metadata](#)
[Publications](#)

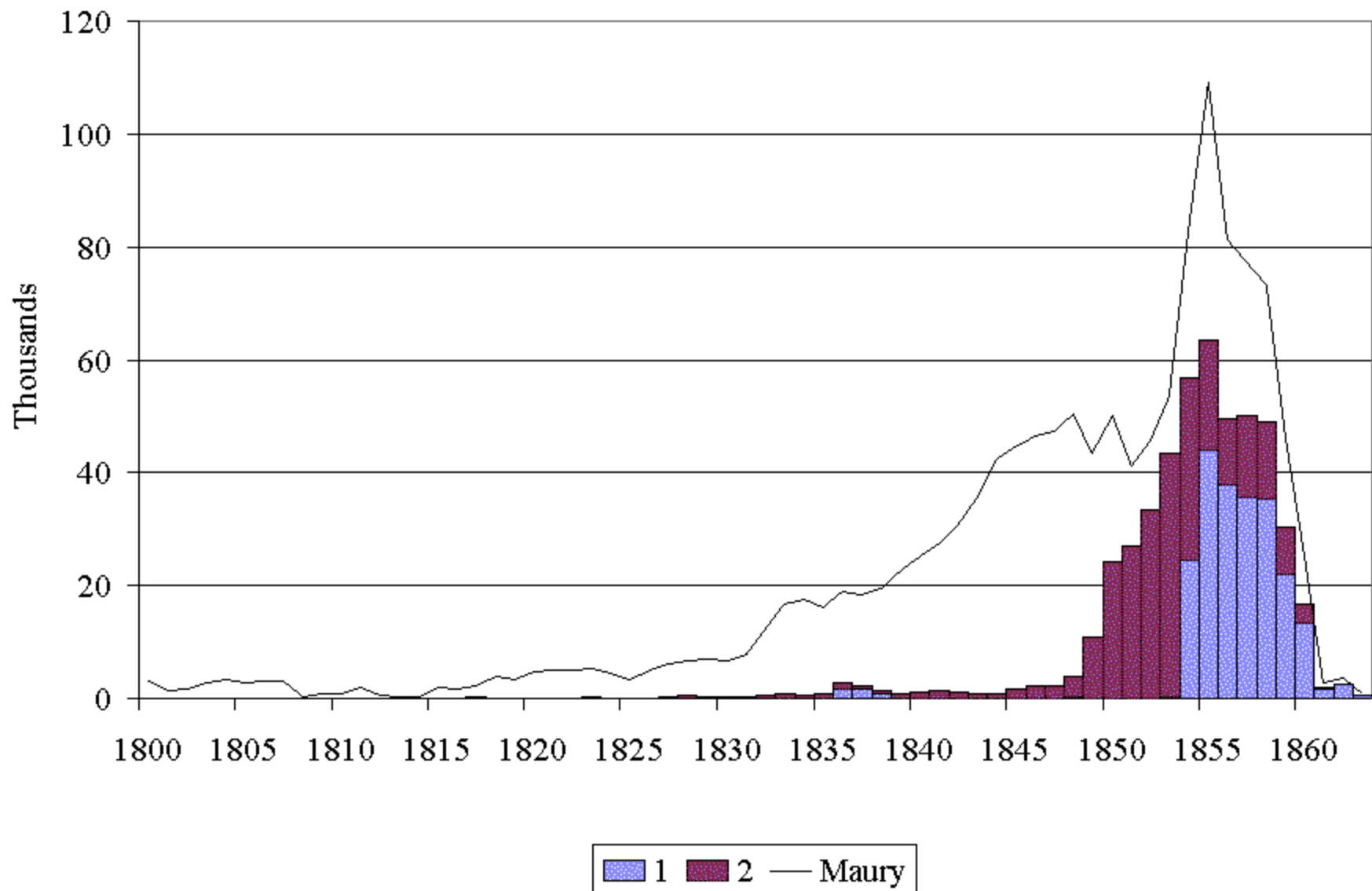
[Contact Points](#)

<http://www.cdc.noaa.gov/coads/>

COADS Release 1c



Maury Collection (line) and SLP Bias Flags: 2 = gravity 1 = temp + gravity (←Todd Mitchell)



SST:

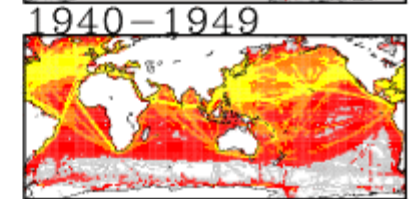
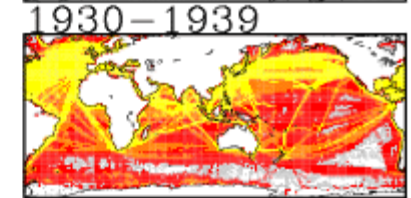
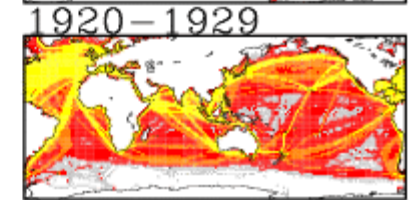
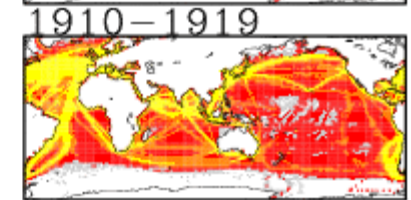
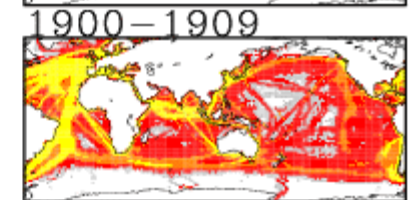
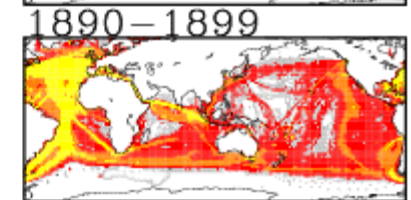
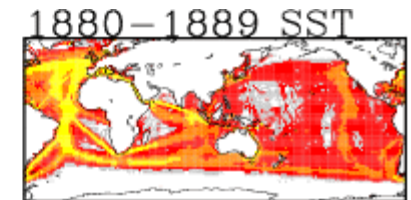
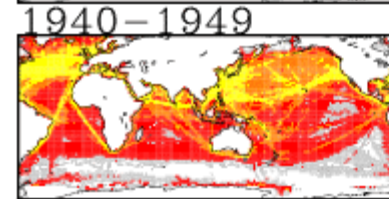
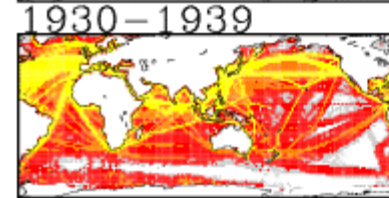
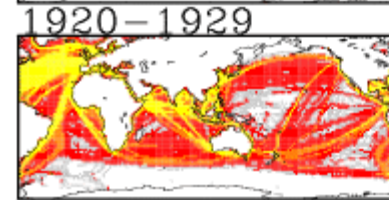
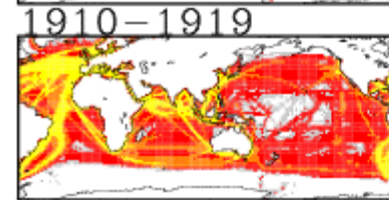
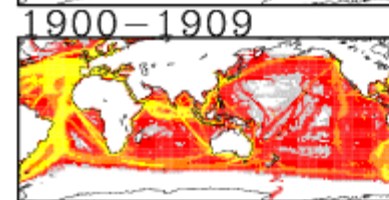
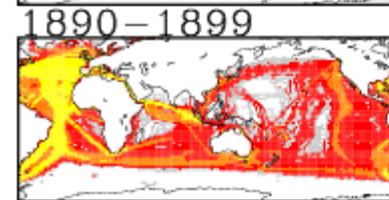
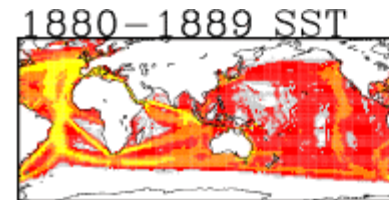
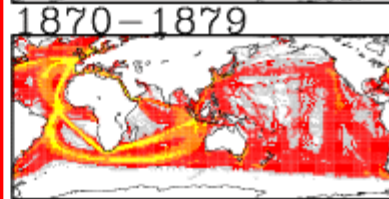
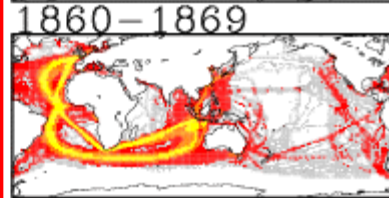
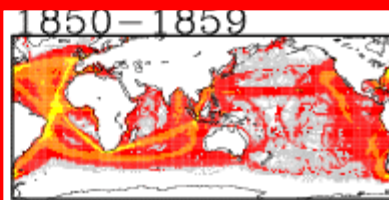
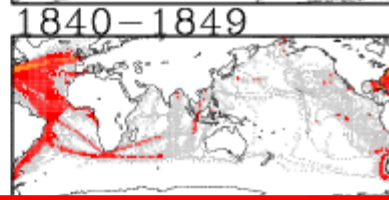
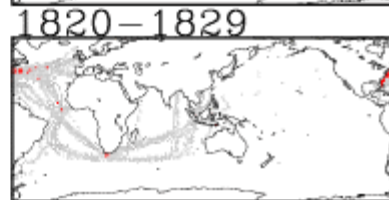
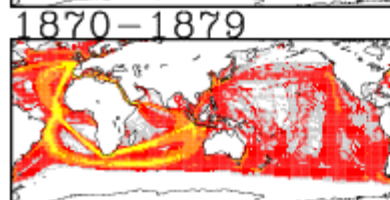
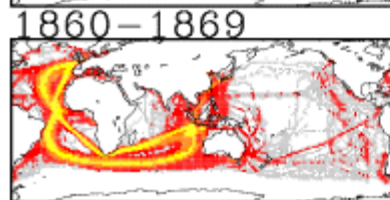
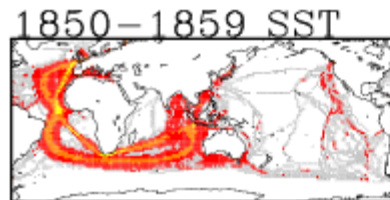
Release 1 (left)

Release 2.0

(right)

Obs/2° box/decade:

grey	1-9
red	10-99
orange	100-399
yellow	400-

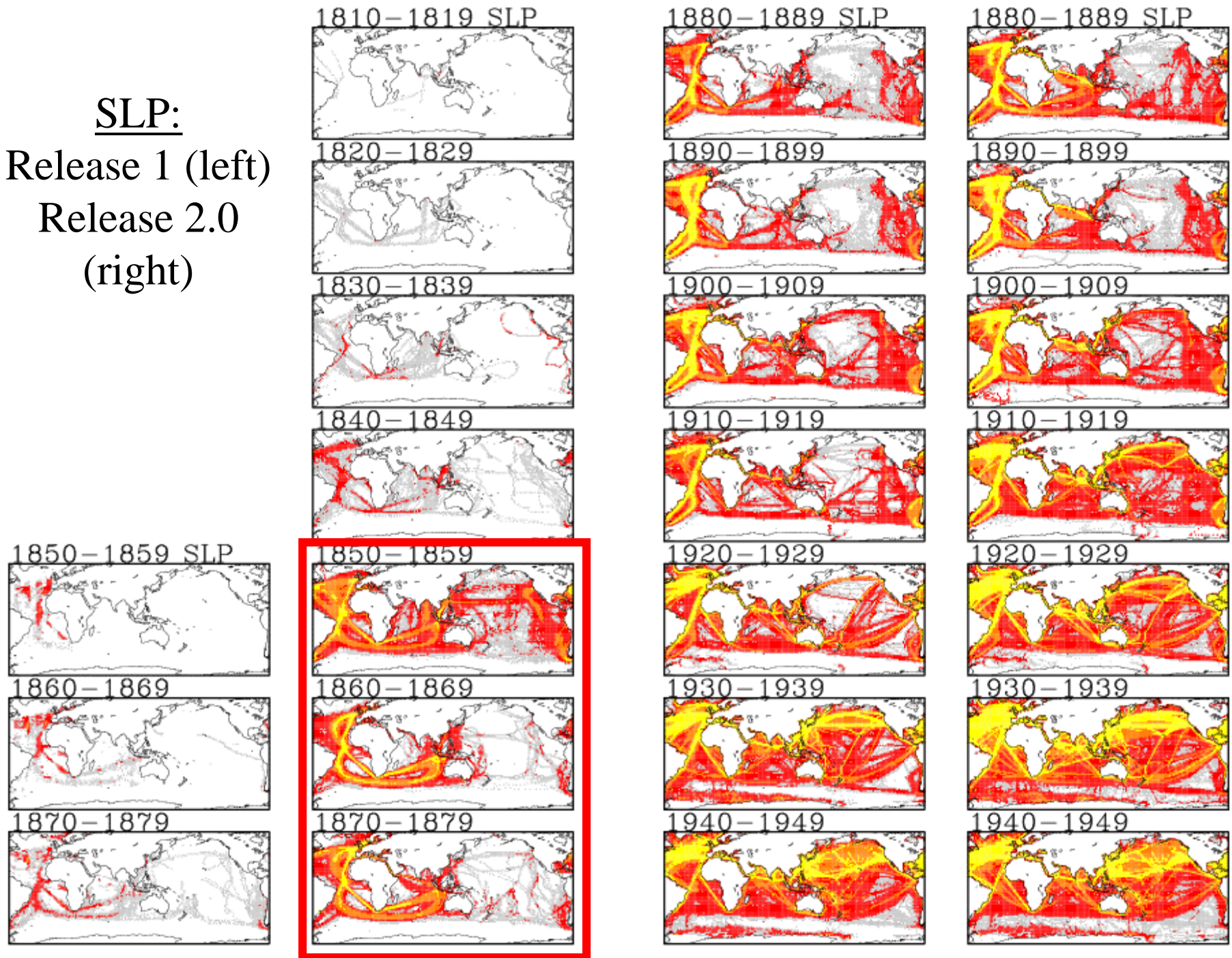


SLP:

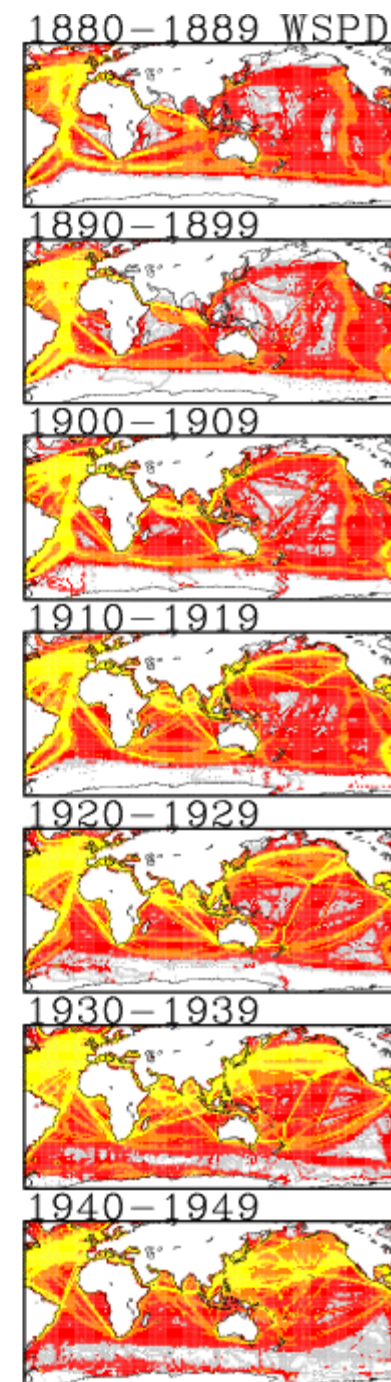
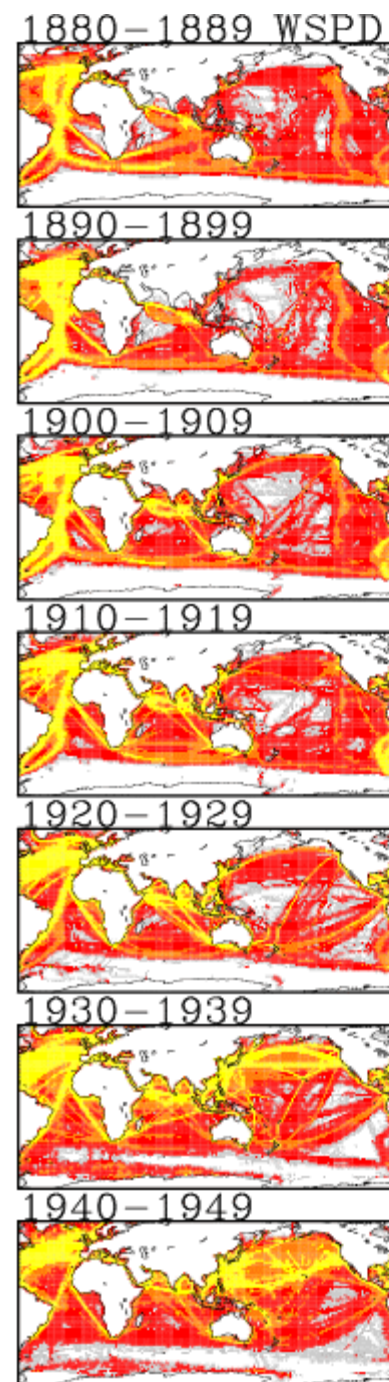
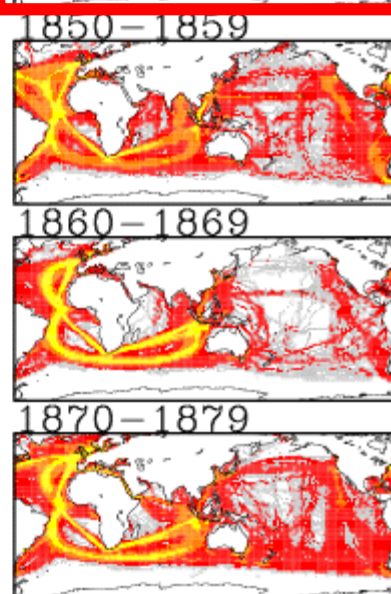
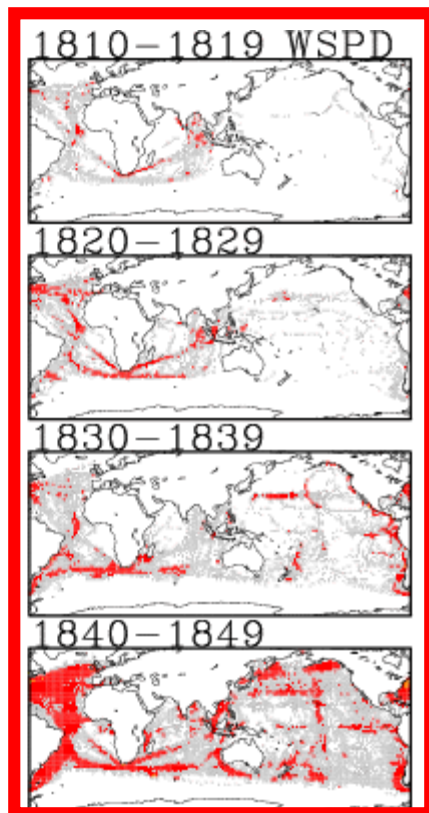
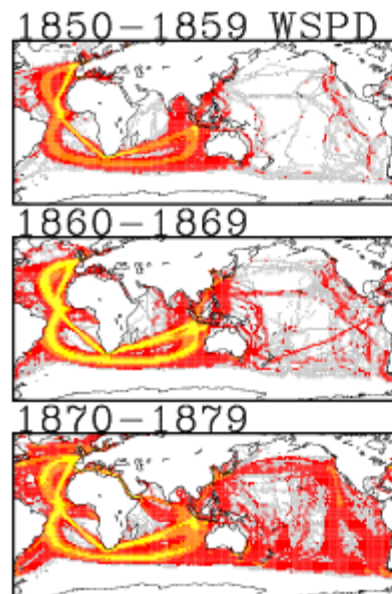
Release 1 (left)

Release 2.0

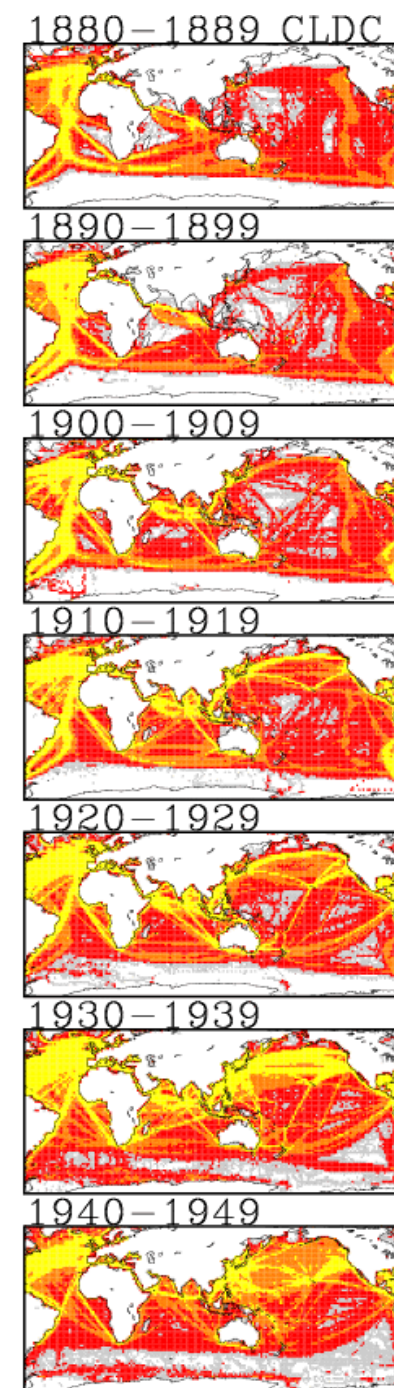
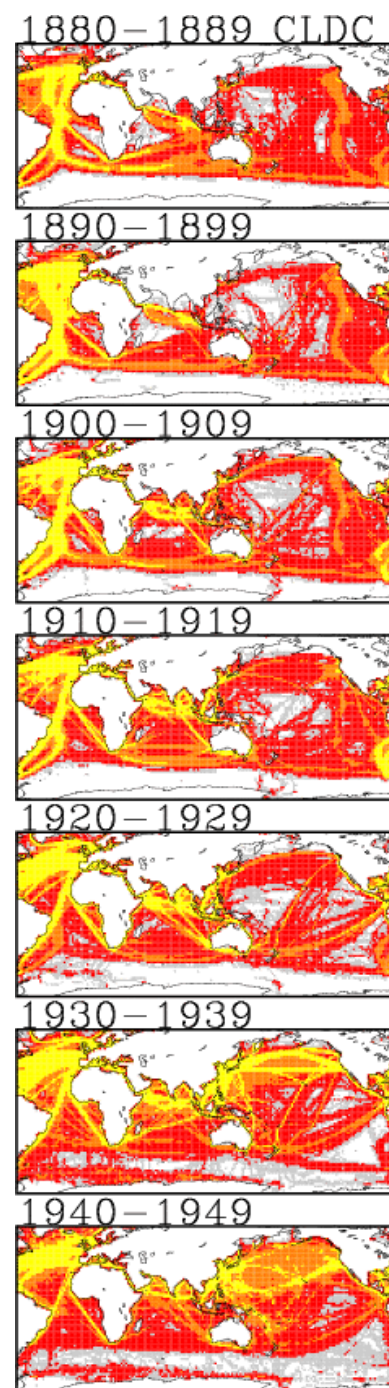
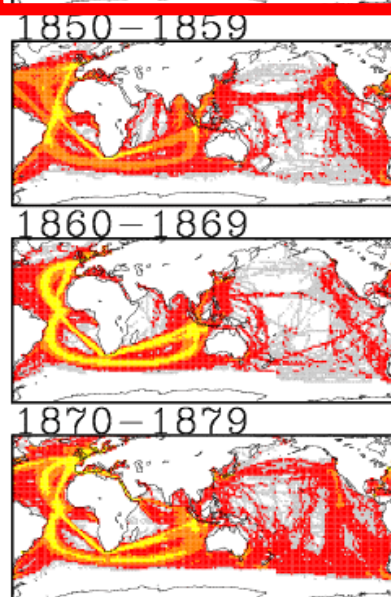
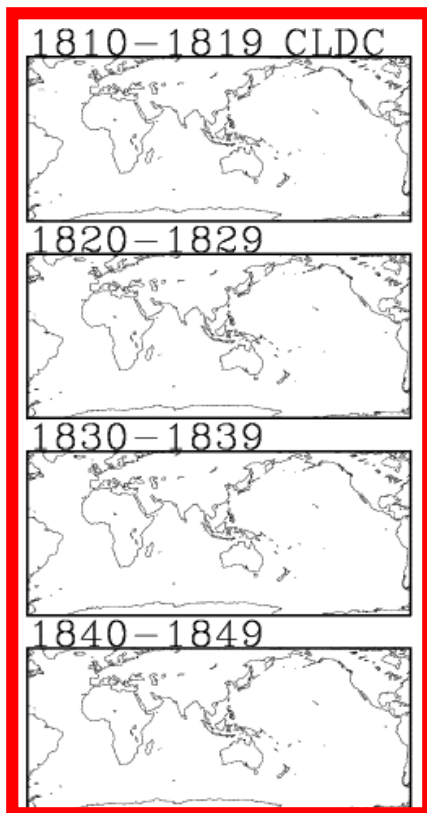
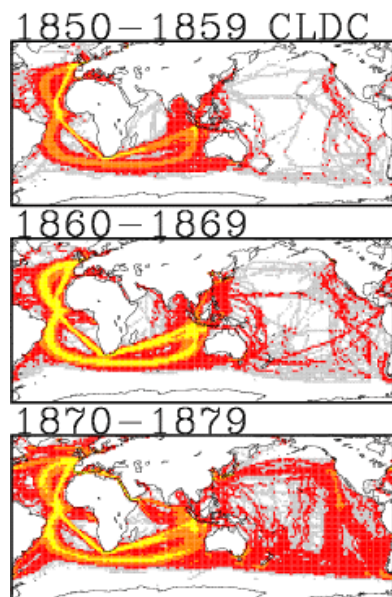
(right)



Wind speed:
Release 1 (left)
Release 2.0
(right)



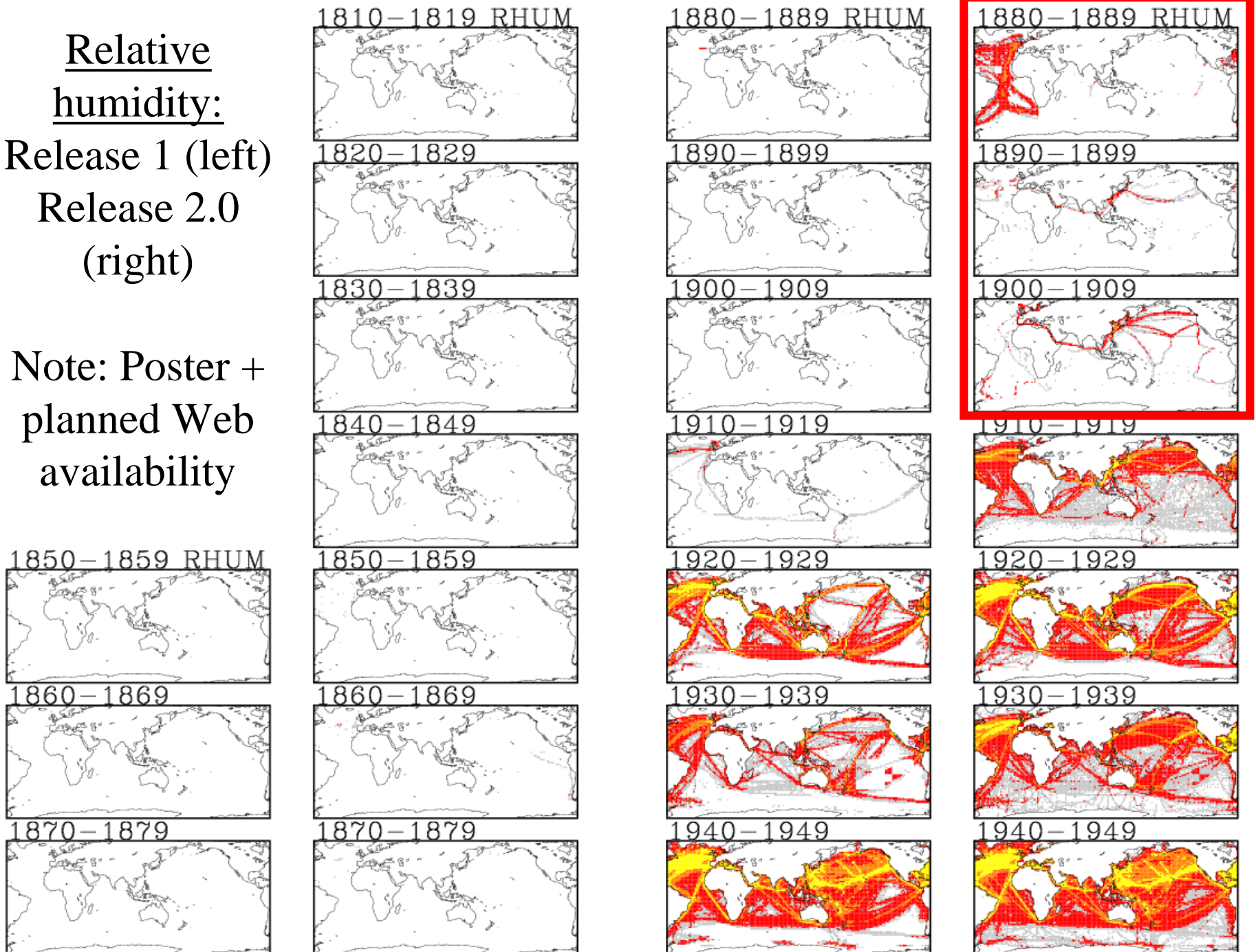
Total Cloudiness:
Release 1 (left)
Release 2.0
(right)



Relative
humidity:

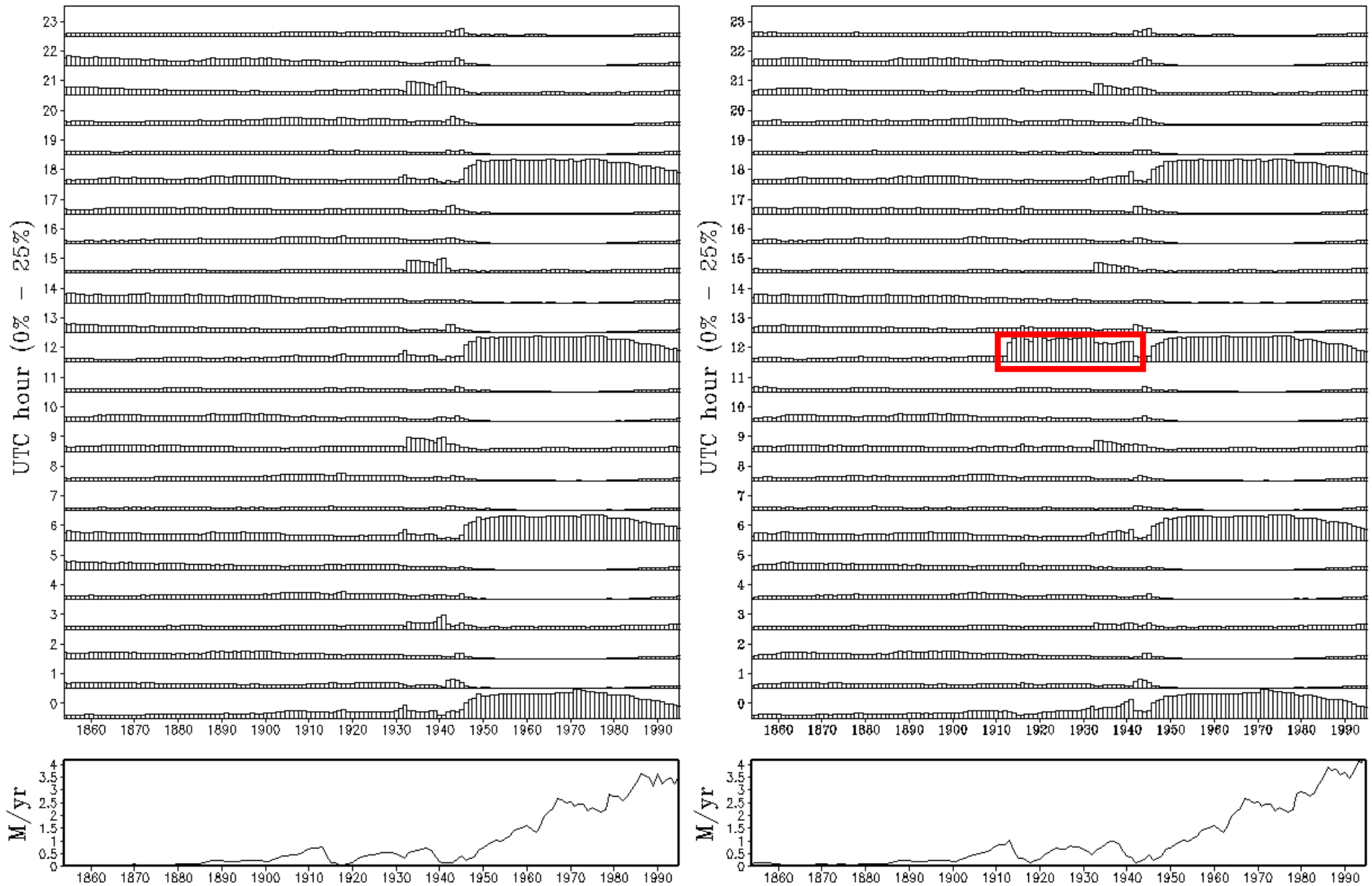
Release 1 (left)
Release 2.0
(right)

Note: Poster +
planned Web
availability



UTC Hour Comparison

Release 1 (left) vs. 2.0 (right)



Processing Improvements:

International Maritime Meteorological Archive Format (IMMA)

- Under development for WMO/JCOMM
- For countries keying historical data:
 - Simple ASCII: eliminate complex encodings
 - Logical organization, flexible and expandable
 - Core + attachments (e.g., historical vs. contemporary)
- Also for VOSClm and near-real-time data

Processing Improvements: Near-real-time Data Delivery

Goals (NCDC taking the lead):

- Monthly extension: GTS data (only)
- Data availability: ~5 days after end of month
- Observations: IMMA format
- $2^{\circ} \times 2^{\circ}$ and/or $1^{\circ} \times 1^{\circ}$ summaries (details tbd)

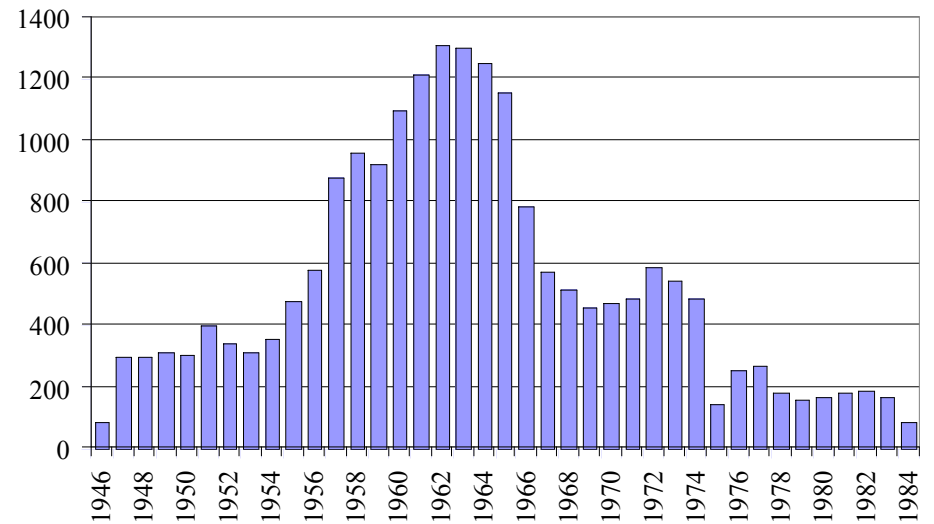
Periodically (~5 yearly evolving toward annually):
delayed-mode updates (version tagged)
to replace near real-time data

Auxiliary Data Sets

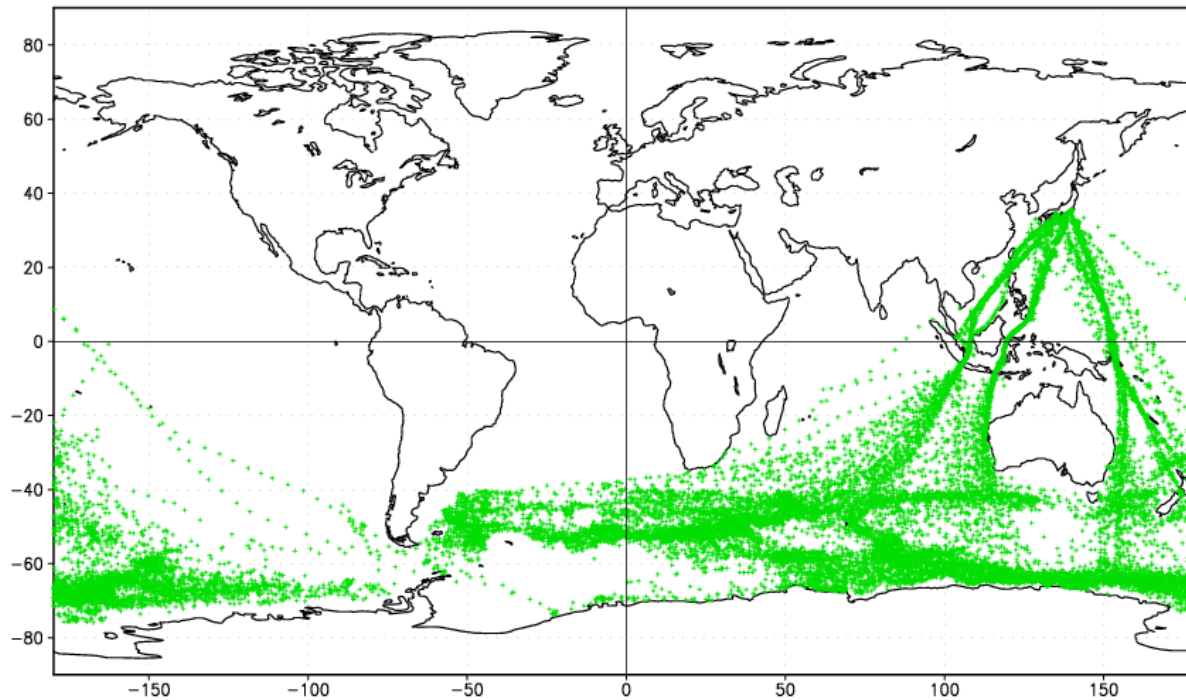
- High-priority data sets
- Likely unique data
- Prior to full blend
- Uniform formats (LMRF + IMMA)
- Examples...

Japanese Whaling Ships (30K reports)

Japanese Whaling Ships

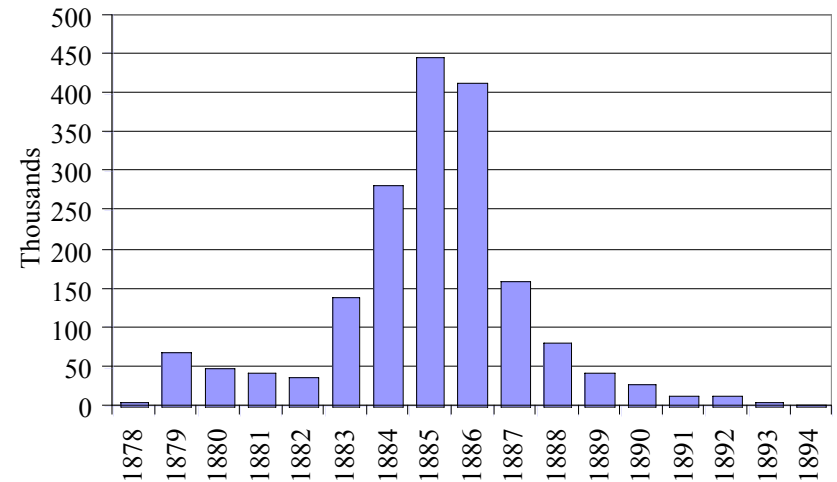


Japanese Whaling Ships 1946–1984

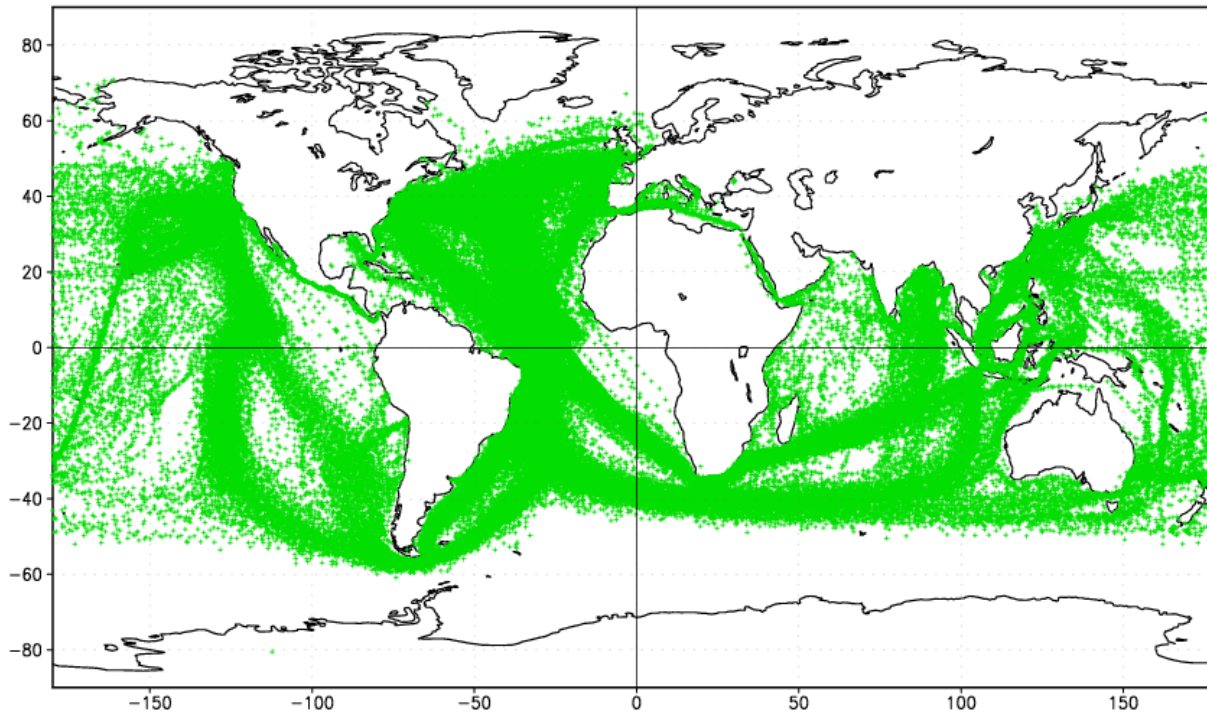


U.S. Marine Meteorological Journals (1.8 M reports)

U.S. Marine Meteorological Journals



U.S. Marine Meteorological Journals 1878–1894



Proposed: International marine observational archive

- COADS has evolved
- Extensive international partnerships + data
 - E.g.: China, Japan (Kobe), German, UK MDB
- New name to separate: obs \Leftrightarrow products
- Invigorate funding
- For breakout discussion?

Vision: Shared Observational Foundation for International Products

Analyses: COADS next? UK Had? etc.

Basic stats: COADS 2°/1° UK basic etc.



International Comprehensive Ocean-Atmosphere Data Set
(ICOADS) ?

US Navy Frigate
Constitution
1854-55:
logbook in
German Maury
Collection

